Chapter 7

Conclusions

This study addressed three questions of interest to the Los Angeles District regarding re-operation of Alamo Reservoir. These questions were:

- Can Alamo reservoir be operated to protect against bald eagle nest inundation, and if so, can impacts on the riparian habitat and other listed species be approximated?
- Can different draw-down schemes for required maintenance improve reservoir performance based on evaluation criteria used in the BWRCTC study?
- Can improvements to the operation plan recommended by the Bill Williams River Corridor Technical Committee be made based on results from an HEC-PRM model of the Alamo Reservoir system?

Addressing these questions led to the following conclusions:

1. Results from a combined approach using an optimization (HEC-PRM) and simulation model of the Alamo Reservoir system confirmed that the operating rule proposed by the Bill Williams River Corridor Technical Committee performs very well.

2. The HEC-PRM model results agree with the BWRCTC findings that 1,125 feet is a good target elevation to meet operational objectives.

3. Slight modifications to the BWRCTC rule form can increase the number of pulse flow events (desirable for riparian habitat) over the simulation period.

4. A flexible draw-down scheme that schedules draw-down events based on the condition of the reservoir instead of on a rigid schedule significantly improves reservoir performance according to the evaluation criteria.

5. Based on the historical record of inflows and the physical characteristics of Alamo Reservoir, it is impossible to prevent eagle nest inundation 100% of the time without structural modifications to the outlet works.

6. Probabilistic simulation of eagle nesting behavior shows that if a modified version of the BWRCTC proposed rule is implemented, there exists an 0.18 probability that an eagle nest will be inundated during a year.

7. The chance of eagle nest inundation can be reduced to 5% per year by implementing an operating policy that responds to the nesting behavior of the eagles, but this reduction in inundation risk causes significant reductions in

performance for other objectives including protecting other species listed under the Endangered Species Act, and even maintenance of forage area for the bald eagles.

8. Provisions in the Endangered Species Act, such as the federal consultation process and multi species recovery plans provide a legal method for the USACE to help formulate a comprehensive long-term approach to manage conflicting interests between listed species impacted by operation of Alamo Reservoir.